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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,637	04/20/2004	Charles Lynn Chidester	14374.54	5324
66358 7590 02/01/2007 VARIAN MEDICAL SYSTEMS TECHNOLOGIES, INC. C/O WORKMAN NYDEGGER 60 E. SOUTH TEMPLE SUITE 1000 SALT LAKE CITY, UT 84111			EXAMINER THOMAS, COURTNEY D	
			ART UNIT 2882	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 02/01/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,637	CHIDESTER, CHARLES LYNN	
	Examiner	Art Unit	
	Courtney Thomas	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-11, 15, 17, 25 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-10, 17, 25, 30-32 and 34-36 is/are allowed.
- 6) ☒ Claim(s) 11 and 33 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

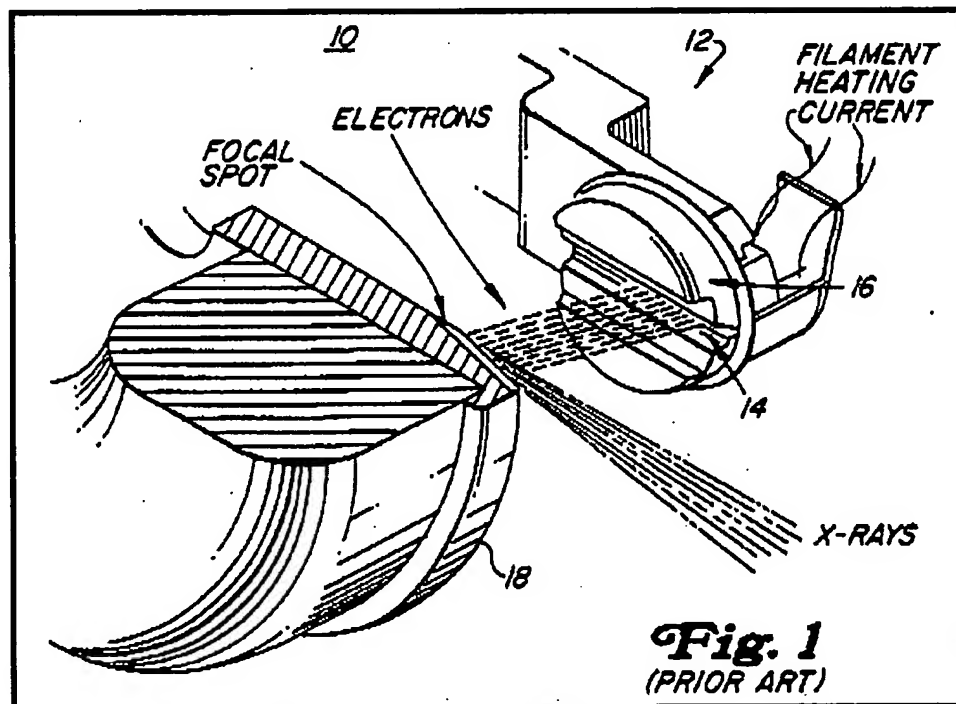
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|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommerer (U.S. Patent 5,907,595) in view of Hoegler et al. (U.S. Patent 4,959,585).



3.

Figure 1 – Cathode assembly – U.S. Patent 5,907,595 to Sommerer

4. As per claim 11, Sommerer discloses a cathode assembly comprising a base (not numbered, see Fig. 1 above) a cathode cup (16) attached to the base portion, the cathode cup including at least two walls which cooperate to at least partially define a slot (see Fig. 1 above); a

Art Unit: 2882

filament (14 – column 3, lines 62-67) disposed substantially within a slot. Sommerer does not explicitly disclose the filament as being a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis.

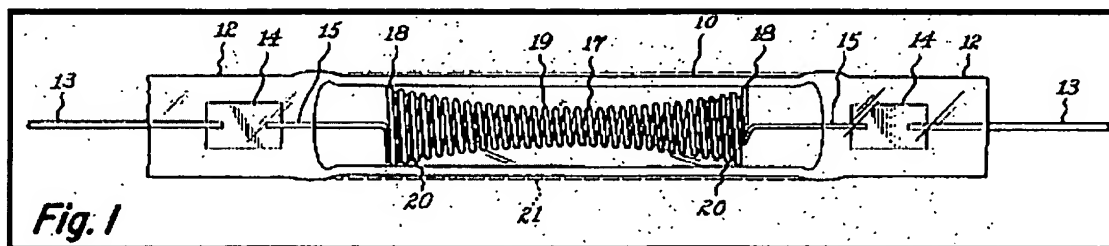


Figure 1 – Filament – U.S. Patent 4,959,585 to Hoegler et al.

6. Hoegler et al. disclose a filament (17); a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis (see Fig. 1 above). Hoegler et al. teach that such construction enables physical engagement with an electrical connecting portion, while providing support for the filament; as well as controlling irradiation parameters via filament diameter (see also Figs. 1a, 1b, 3 and 5, not shown above; column 7, lines 25-50).

7. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cathode assembly of Sommerer such that it incorporated the filament of Hoegler et al. One would have been motivated to make such a modification for the purpose of providing a filament that enables physical engagement with an electrical connecting portion, while providing support for the filament; as well as controlling irradiation parameters via filament diameter, as taught by Hoegler et al. (column 7, lines 25-50).

Art Unit: 2882

8. **As per claim 33**, Sommerer as modified above, discloses a cathode assembly wherein the predetermined location comprises a location proximate a center of the filament.

Allowable Subject Matter

9. Claims 3-10, 17, 25, 30-32 and 34-36 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

11. **As per claim 3 and dependent claims 4-10 and 30-32**, the examiner found no reference in the prior art that disclosed or made obvious an X-ray tube comprising: a filament and a cathode cup including two walls which cooperate to at least partially define a slot wherein the filament is at least partially disposed, a distance between the filament and the at least one wall varying along at least a portion of the longitudinal length of the filament, and the distance between said filament and at least one of the at least two walls being at a minimum proximate a middle portion of the filament, as recited in independent claim 3.

12. **As per claim 17**, the examiner found no reference in the prior art that disclosed or made obvious a method for producing an electron stream having a predetermined electron density profile comprising the step of varying with respect to a longitudinal length of a filament the rate at which electrons are emitted by the filament, the varying of the rate at which electrons are emitted being implemented by performing heating a filament in such a way that some portions of the filament are at a relatively higher temperature than other portions of the filament, and including all limitations as recited in independent claim 17.

13. **As per claim 25 and dependent claims 34-36**, the examiner found no reference in the prior art that disclosed or made obvious a filament comprising a wire wound into successive

Art Unit: 2882

coils to form a helix, wherein a wire diameter is greater in a middle portion of the helix than in the first and second end portions and including all limitations as recited in independent claim 25.

14. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. As per claim 15, the examiner found no reference in the prior art that disclosed or made obvious a cathode assembly, wherein the slot at least partially defined by the walls of the cathode cup has a cross sectional area that varies along at least a portion of a length of the slot.

Response to Arguments

16. Applicant's arguments filed 11/16/06 have been fully considered but they are not persuasive. For clarity, Applicant's arguments will be presented in the order in which they appear.

17. Applicants contest the rejection of claims 11, and 33 in view of Sommerer (U.S. Patent 5,907,595) and Hoegler et al. (U.S. Patent 4,959,585) for at least the following reasons:

18. a) Examiner has not established that the cathode assembly of Sommerer suffers from a deficiency that could or would be remedied by the disclosure of Hoegler. Examiner notes that the above rejection is not based on a noted deficiency of a prior art device, but based on the teachings of a prior art to produce the claimed invention where there is some teaching suggestion or motivation to do so found either in the reference or in the knowledge generally available to one of ordinary skill in the art (MPEP 706.02 (j)). In this instance, Sommerer is identified as disclosing a cathode assembly comprising a base, a cathode cup attached to the base portion, the cathode cup including at least two walls which cooperate to at least partially define a slot and a

Art Unit: 2882

filament disposed substantially within the slot. It is noted that Sommerer does not explicitly disclose the filament as being a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis. Hoegler is introduced for its teachings of a helically wound wire filament whose diameter varies along its length. Hoegler teaches that such construction enables a physical engagement with an electrical connecting portion, while providing support for the filament. Additionally Hoegler teaches that such a filament allows the controlling of irradiation characteristics via filament diameter. Examiner notes that the teachings found within Hoegler provide the requisite motivation for the modification of Sommerer.

19. b) Examiner has not established a reasonable expectation of success, since Hoegler is directed to an incandescent lamp, while Sommerer is directed to an emitter cup for high emission X-ray tubes. Examiner disagrees. The modification of Sommerer is directed to modifications to the disclosed filament. It is not based on placing an "incandescent lamp filament" within a "high emission X-ray tube." Rather, the suggested modification is to vary the filament of Sommerer such that the filament diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis, as taught by Hoegler. As noted above, the suggestion for such modifications are found within the Hoegler reference. Additionally, Examiner notes that the filament of Hoegler is tungsten and/or molybdenum (column 3, lines 28-34) the same material as disclosed by Applicants (see specification para [0040]). By virtue of the filament of the prior art being same material used as Applicants, it can be reasonable expected that the filament of

Art Unit: 2882

Hoegler would perform within the device of Sommerer (see also MPEP 2144.09 – for discussions on materials having similar chemical makeup).

20. The rejections of claims 11 and 33 are maintained, for at least the reasons noted above.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Courtney Thomas
Primary Examiner
Art Unit 2882